

South Dakota State University

## Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange

---

SDSU Extension Fact Sheets

SDSU Extension

---

1973

### Forage Sorghums in South Dakota

Cooperative Extension South Dakota State University

Follow this and additional works at: [https://openprairie.sdstate.edu/extension\\_fact](https://openprairie.sdstate.edu/extension_fact)

---

#### Recommended Citation

South Dakota State University, Cooperative Extension, "Forage Sorghums in South Dakota" (1973). *SDSU Extension Fact Sheets*. 650.

[https://openprairie.sdstate.edu/extension\\_fact/650](https://openprairie.sdstate.edu/extension_fact/650)

This Fact Sheet is brought to you for free and open access by the SDSU Extension at Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. It has been accepted for inclusion in SDSU Extension Fact Sheets by an authorized administrator of Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. For more information, please contact [michael.biondo@sdstate.edu](mailto:michael.biondo@sdstate.edu).

# Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.



For current policies and practices, contact SDSU Extension

Website: [extension.sdstate.edu](http://extension.sdstate.edu)

Phone: 605-688-4792

Email: [sdsu.extension@sdstate.edu](mailto:sdsu.extension@sdstate.edu)

SDSU Extension is an equal opportunity provider and employer in accordance with the nondiscrimination policies of South Dakota State University, the South Dakota Board of Regents and the United States Department of Agriculture.

# Forage Sorghums in South Dakota



Cooperative Extension Service  
U. S. Department of Agriculture  
South Dakota State University



# Forage Sorghums in South Dakota

By Lyle A. Derscheid, Extension agronomist  
James J. O'Connell, Extension livestock specialist  
Ervin U. Kurtz, Extension dairyman

Sorghum, *Sorghum vulgare Pers.*, believed to have originated in Africa, is a perennial crop in its native land. Forage sorghums are adapted to many areas of South Dakota. They are especially well adapted to most of the southern half of the state. Each year  $\frac{1}{4}$  to  $\frac{1}{2}$  million acres are planted.

One or more types of sorghum is useful for pasture, hay, greenchop, haylage, silage for feed, competitive crop for weed control, a green manure crop for improving soil fertility and tilth, as a cover crop for preventing soil erosion or as an aid in preparing a seedbed for perennial forage crops.

Sorghum is quite resistant to drought and grows in areas where average annual rainfall is as low as 15 inches. It is a warm-season crop with the most favorable mean temperature for growth about 80 degrees. Because of temperature requirements, it is rarely grown above 6,000 feet. The maximum elevation is somewhat lower than this in South Dakota.

Sorghum is a short-day plant but most of our forage varieties are relatively insensitive to length of day. Sorghum is produced successfully on all types of soil, growth being dependent upon relative fertility and soil moisture supply. It is more tolerant to alkali or salts than most cultivated crops.

## CLASSES OF SORGHUM

Sorghums are generally classified on the basis of usage into: (1) grain sorghum, (2) forage sorghum, (3) grass sorghum (sudangrass), (4) syrup sorghum, and (5) broomcorn. Only forage sorghum and sudangrass will be discussed in this publication. However, since hybrids of these two groups have become so popular, sorghum-sudangrass hybrids will be discussed as a separate group of forage sorghum.

### Sudangrass

Sudangrass is the most important grass sorghum. It grows to a height of 5 to 8 feet. Leaves are usually 10 to 14 inches long and narrow. The solid stems are  $\frac{1}{3}$  to  $\frac{3}{16}$  of an inch in diameter. The stems of Piper are pithy, but Greenleaf has juicy, sweet stems.

Sudangrass hybrids are produced by crossing two sudangrass varieties. They look like sudangrass varieties but are more vigorous and yield more forage. They are somewhat coarser and are, therefore, less palatable than the common sudangrass varieties.

### Forage Sorghum

Forage sorghum includes the sorgos (sweet sorghums), dual-purpose grain and forage varieties and forage hybrids. The sorgos are the tall sweet-stemmed

varieties, many of which are used to make sorghum syrup. The sorgos grown in South Dakota are the forage sorghum varieties. They are not used for making syrup.

Forage sorghum stems are erect and solid and may grow to be 15 feet tall. There is a leaf and a dormant bud at each joint on alternate sides, much as in corn. The dormant buds at the lower-most joints of some varieties develop into tillers. If plants are thick in the row, these tillers are suppressed. The distance between joints determines the height of the plant. Varieties with the same maturity have the same number of joints and leaves, but the distance between joints varies. Leaves have a waxy surface and inroll during periods of drought. These characteristics help account for the drought resistance of the crop. At maturity, the leaf area is approximately one-half that of corn.

The pith in the stems of sorghum may be either juicy or dry, and sweet or nonsweet. There are varieties with each of the possible combinations. The stems of most forage varieties are both juicy and sweet. If pith is juicy, the leaf midribs are opaque. If pith is dry, leaf midribs are white.

Sorgo (forage sorghum or sweet sorghum) varieties most common in South Dakota are Rox orange (Waconia) and Rancher.

Forage hybrids are produced by growing male-sterile female parents in a crossing field with male-parent pollinators that are sorgos or dual-purpose forage varieties. Hybrids are of several types. Female parents of forage hybrids are generally grain sorghum male-steriles such as Combine Kafir-60, Martin or Redlan. Male parents are usually sorgos (forage sorghum varieties) or Hegari derivatives. Some hybrids with a sorgo (forage sorghum variety) as a male parent do not produce much seed. Hybrids with a sorgo (forage sorghum) hybrid as a male parent resemble sorgo but are intermediate in sweetness and juiciness. Such hybrids are frequently earlier than their sorgo parents, and produce much more grain and somewhat more stover than sorgo.

Hybrids with Hegari (or Hegari derivative) as a male parent are late in maturity, quite tall, and high in grain production. Such hybrids produce almost twice as much forage as forage sorghum varieties of the same duration of growth and the forage has about 20 per cent grain by weight. Most of these hybrids have a tendency to lodge.

### Sorghum-Sudangrass Hybrids

Sorghum-sudangrass hybrids usually have grain sorghum female parents and sudangrass male parents.



The female parents are usually Combine Kafir-60, Martin, or Redlan, and the male parents usually Piper, Sweet, or Greenleaf sudangrasses.

Sorghum-sudangrass hybrids yield about as much dry forage as forage sorghum varieties of similar maturity. Stems are intermediate between sorghum and sudangrass in coarseness. Tillering is also intermediate. They have several basal buds that produce regrowth after top growth is removed. They are relatively early in maturity. The stems may be juicy, somewhat dry and sweet, or intermediate depending on the parentage. A combination of fine stems, palatability, and recovery after grazing or cutting makes these hybrids similar to sudangrass hybrids for utilization. Sorghum-sudangrass hybrids are not as low in prussic acid content as low HCN varieties of sudangrass.

### Grain Sorghum

Grain sorghum varieties and hybrids usually are not planted for forage but when grain production is low due to drought or immaturity, they can be harvested for forage or silage. Silage is a useful feed for lambs or young cattle, but any mature grain in the silage will probably pass through mature cattle undigested. Grain fields that have been harvested for grain can be pastured after harvest.

### USES OF SORGHUM

Sorghum is a coarse grass with a leaf and a dormant bud at each joint. In some strains the dormant buds produce tillers from joints near the base of the plant. The leafiness, the ability to produce regrowth from the basal buds and the size of the stem determine how each class of sorghums can best be used. The uses of the various sorghum classes are summarized in Table 1.

### Sudangrass

The leafiness of sudangrass, its ability to grow during hot weather, and its capability of producing regrowth after top growth is removed adapt it to a wide variety of uses. Although not always the best sorghum for each use, it can be used effectively for all the uses listed for forage sorghums.

Table 1. Rating of three classes of forage sorghums for their best uses\*

Uses	Sudan	Sorghum-sudan	Forage sorghum
Pasture .....	1	2	---
Hay .....	1	2	---
Haylage .....	1	2	---
Greenchop .....	2	1	3
Silage .....	---	2	1
Cover crop .....	1	2	---
Green manure .....	1	2	---
Fall grazing .....	2	1	---

\*No. 1 indicates that is best type of sorghum for the designated use.

**Pasture.** Sudangrass is particularly well adapted as a temporary or supplemental summer pasture crop. Under normal conditions, it will produce an abundance of palatable, nutritious pasturage.

Rotate grazing to get best production with less risk of prussic acid poisoning. Start grazing with 4 animal units per acre when sudangrass varieties are 18 inches tall or sudangrass hybrids are 24 inches tall. Discontinue grazing when 6 to 8 inches tall. Move livestock to another sudangrass pasture, a permanent pasture or grain stubble. Regrazed in 3 to 4 weeks when regrowth is 18 or 20 inches tall. Do not turn cattle into a new sudangrass pasture when hungry; let them have a fill of other forage first. Do not pasture new regrowth which may develop for several weeks after the first fall frost.

Sudangrass plants stay alive during periods of drought, even after mowing or heavy pasturing and will resume rapid regrowth after a rain. Better regrowth is obtained if a 6- to 8-inch stubble is left than if all top growth is removed. Frosted foliage contains very little prussic acid (HCN), after it is dry, but new regrowth generally contains large amounts. The use of Piper sudan practically eliminates the problem of prussic acid.

Cattle graze sudangrass in preference to perennial grasses during July and August. Likewise, they prefer a sudangrass variety to a sudangrass hybrid, though hybrids are readily grazed. In one test a hybrid produced about 60 percent more forage with slightly lower protein content than Piper. The hybrid contained 90 percent more prussic acid in early July and 30 percent more in late July and September.

Sudangrass planted in rows with 6- or 12-inch spacing produces higher yields per acre than when planted with 36-inch spacing. Trampling is less in the wide-spaced rows. Weed competition is much less in the narrow-spaced rows.

Soybeans mixed with sudangrass improves the nutritional value and increases forage yield for pasture or hay. This practice is recommended in the areas where soybeans are adapted. If soybean and sudangrass are seeded together in one operation, mix them together



Sudangrass cut at 2-inch height (left) does not produce regrowth while sudangrass cut at 6-inch height (right) produces an abundance of regrowth.



before planting and mix the seed often in the drill box. If the soybeans are planted first, wait until bean plants are about 2 inches tall, then seed the sudangrass parallel to the soybean drilled rows. There is very little injury to the soybean seedlings. Plant 1 bushel of soybeans and 10 to 20 pounds of sudangrass per acre.

**Hay.** Though very little sudangrass is cut for hay, it is better adapted for this use than other sorghums. Cut at the early heading stage of growth. Be sure all stems are dry before being put into stack or barn. When properly handled, the hay is palatable and nutritious and is equal to other non-legume forages. A crop can be produced in about 60 days.

**Silage or Haylage.** Most all other forage sorghums are better adapted for use as silage than sudangrass, however, sudangrass makes very good haylage.

**Greenchop.** Sudangrass produces excellent greenchop, but the higher yielding sorghum-sudangrass hybrids are generally better adapted for this use.

**Cover crop.** Because of its leafiness, a solid stand of sudangrass makes an excellent cover crop for protecting soil from wind or water erosion. Plant a minimum of 8 pounds of seed per acre with a grain drill. Seed before August 1 for winter protection.

**Competitive crop.** Sudangrass is very useful for controlling perennial weeds. Duckfoot cultivate three times in late May and June. Plant the sudangrass about July 1, harvest in September and cultivate before freezeup.

**Green manure crop.** Sudangrass is perhaps the best non-legume crop for plowing under to increase soil productivity. It adds organic matter, which improves

soil structure, increases water intake and reduces power requirements for tillage operations. The leafiness of sudangrass makes it relatively easy to plow under and easy for soil bacteria to decompose into humus.

**Seedbed preparation for establishment of perennial forages.** A crop of sudangrass provides a firm, weedfree seedbed for the establishment of perennial grasses or alfalfa. Leave a 6- or 8-inch stubble of sudangrass at harvest time and drill alfalfa and/or perennial grass in the stubble. The stubble provides protection to the new seedlings from wind and blowing soil particles. It is particularly good for fall seedings of perennials if it does not deplete soil moisture below the point needed to get seedlings established.

#### Forage Sorghum

Forage sorghum has larger stems, lower percentage of leaves, and fewer basal buds that produce regrowth, but produce higher yields than sudangrass or the sorghum-sudangrass hybrids. Therefore, they are less satisfactory for pasture, hay or greenchop, but preferable for fodder or silage.

Difference in yield is due to differences in yield of stalks without much change in leaf yield. Crude protein content is highest in the green leaf, lower in the heads, and much lower in the stalks. Most of the digestible protein is in the leaf and grain. Thus, management practices that increase yields frequently result in a lower per cent of protein in the silage produced.

#### Sorghum-sudangrass Hybrids

Sorghum-sudangrass hybrids have fewer leaves, larger stems and fewer basal buds that produce regrowth, than sudangrass and more leaves, smaller stems and more basal buds than forage sorghums. There are variations among hybrids so hybrids in this class are adapted to a wide range of uses.

**Pasture.** Sorghum-sudangrass makes good pasture for beef cow herds and dairy cattle since its high forage yields allow it to carry more animals per acre than most crops. It is generally less palatable than sudangrass, but is grazed satisfactorily.

Rotate grazing to get the best production with less risk of prussic acid poisoning. Start grazing with 5 or 6 animal units per acre when the sorghum-sudangrass is



Sorghum-sudan hybrid (left) and sudangrass hybrid (right) showing differences in leaf thickness.



Forage sorghum varieties.



24 inches tall. Discontinue grazing when stubble is 6 to 8 inches tall. Move livestock to another sorghum-sudan pasture, permanent pasture or stubble field. Regrazed in 25 to 30 days when regrowth is 20 to 24 inches tall.

With rotational grazing, 5 to 6 animals per acre can be maintained under ideal growing conditions. With continuous grazing about 4 animals per acre can be maintained for a season. On a dry weight yield basis, this would be approximately 5 to 6 tons of dry matter per acre.

Early grazing provides more digestible protein and more energy in the forage at a time when prussic acid levels are low. Digestibility decreases after plants are 4 feet tall. Feeding value before this stage compares favorably to that of alfalfa. Once sorghum-sudan grass hybrids head out, the crude and digestible protein content decreases rapidly. As much as 25 percent more forage can be produced in 30 days of regrowth when an 8-inch stubble is left than with a 4-inch stubble. Planting in 6-inch rows produces more forage with less weed competition than planting in wider rows. There is somewhat less trampling in wider rows.

Prussic acid content varies with hybrids, but most of them contain a higher percentage than Piper or Greenleaf sudangrass. Any prussic acid problems can usually be traced to grazing drought-stunted plants or young regrowth following a killing frost. By waiting until sorghum-sudan grasses are at least 24 inches tall before grazing, the concentration of prussic acid is generally at such low levels that the possibility of poisoning is almost eliminated.

**Fall Pasture.** The ASCS farm program frequently encourages the planting of a summer cover crop that can be grazed in the fall. Though the feed value of most crops is lower in the fall than earlier in the season, some can be managed so that they produce good quality forage.

Sorghum-sudan grass hybrids are perhaps the best crops for this use. They have strong stems that remain erect all winter. They are leafy and provide a large quantity of good quality forage. In some areas, these hybrids have been grazed until late in January. Care should be taken immediately after a frost. Frosted foliage is safe to feed after it is dry, but new growth is apt to contain a high percentage of prussic acid.

The maturity of the plants can be controlled by the date of planting and by clipping so that plants do not mature before the forage is ready to be grazed. If a sorghum-sudan grass hybrid is planted in early June, the first growth will start to mature by August 1st. Since it takes about 30 days to produce enough regrowth for grazing, cut the plants back to 6 inches approximately one month prior to the date the forage will be grazed. Of course, this forage cannot be removed from the field on "set aside" acres.

With good rainfall and higher temperatures the forage may need to be cut more than once in order to obtain the best quality forage. If planting can be delayed until July 15, the first growth will be about the prebloom stage on September 1st under normal grow-

ing conditions. The county ASCS office can give information about planting deadlines in your county.

**Haylage.** Since sorghum-sudan grass hybrids contain a high percentage of water, wilting is a must for high quality haylage. Cut in the prebloom stage (when the seed head is still in the boot) to get good haylage yields with high feed value. Dry down to 30-40 percent moisture to get good quality haylage.

**Silage.** Although sorghum-sudan grass hybrids make excellent silage, forage sorghum hybrids are preferred for this use because they produce more tonnage in a single cutting.

**Green chop.** Some dairy operators use sorghum-sudans for green chop when about 30 inches tall. Clean up all forage daily to prevent heating and possible prussic acid and nitrate poisoning. Since sorghum-sudan grass forage is high in water content, feed high energy feeds and dry hay along with the green chop.

**Hay.** Sorghum-sudan grass hybrids are sometimes sown broadcast and cut for hay. Such hay is hard to cure but can be put in large piles during the dry season of the year and later stacked. The use of a crimper helps dry the large stems and makes the hay easier to store.

## HAZARDS OF SORGHUM FORAGE

Under certain conditions, prussic acid and nitrate content of sorghum may cause problems.

### Prussic Acid

Plants of sorghum and sudangrass sometimes contain a glucoside called dhurrin, which may break down into prussic acid or hydrocyanic acid (HCN). Silage and dry fodder may contain toxic amounts of prussic acid at harvest time, but it generally disappears during the curing processes. The prussic acid content in the green plant decreases as maturity approaches. Sorghum leaves contain more HCN than other parts of the plant and upper leaves more than lower leaves. Tillers and side branches are higher in HCN than the stems from which they grow. The amount of prussic acid varies in different sorghum varieties. Piper and Greenleaf sudangrass and Rancher sorghum are varieties selected especially for low HCN content. The danger from grazing can be reduced by grazing rotationally. Most of the HCN is contained in new growth. If the sorghum or sudangrass is 18 to 24 inches tall when first grazed, there will be a high percentage of older growth and a relatively low percentage of HCN. However, if plants are grazed continuously, new growth is constantly being grazed and danger from HCN poisoning is greater.

### Nitrate Poisoning

Nitrates in forages do not in themselves cause the poisoning of farm animals. Instead, they are converted to nitrites in the animal, and nitrites are toxic. In cows and sheep, this conversion takes place in the rumen (paunch), in horses in the caecum.

The nitrites get into the blood stream and reduce the oxygen-carrying capacity of the blood. When the



blood can no longer supply the tissues with oxygen, the animal actually suffocates.

Green sorghum or sudangrass plants and sorghum fodder have caused losses from nitrate poisoning. Plants seldom accumulate excessive amounts of nitrates unless the soils on which they grow are relatively high in nitrates. In addition, drought, hail or frost which slows plant growth, are generally required before plants become poisonous. As a general rule, the nitrate content of young plants is higher than for older plants. It decreases as the plants reach maturity.

When high nitrate material is ensiled, under certain conditions, nitrate may be released from the silage as a mixture of nitrogen oxide gasses. These are often visible as yellow-red fumes. The nitrate content is reduced, but the gases are toxic to man and to livestock. The gases are heavier than air and settle near the floor. Therefore, the silo and attached barns should be properly ventilated while filling the silo and for some weeks afterwards.

The gases formed from nitrates also destroy carotene (vitamin A), and it may be necessary to include vitamin A in the ration when silage of high nitrate is fed to livestock.

If there is reason to believe that ensiled sorghum is toxic, test for nitrates just before it is to be fed.

If the percent of potassium nitrate in forage is below 0.15 percent, there is little danger of nitrate poisoning. Feeds containing between 0.15 and 0.30 percent can be fed safely by limiting their use to one-half of the total dry matter in the ration. Feeds in the range of 0.30 to 0.45 percent should be limited to less than one-fourth of the total dry matter. Forages containing over 0.45 percent nitrate nitrogen are potentially toxic and should not be fed.

More complete information on nitrate poisoning is given in Fact Sheet "Forage Nitrate Poisoning."

### FORAGE SORGHUM PRODUCTION

Proper seedbed preparation kills weeds, conserves moisture and forms a firm, mellow, warm seedbed. Germination is faster in warm soil and more uniform in a firm seedbed. Since sorghum seedlings grow slowly and do not compete favorably with weeds, shallow cultivation immediately before planting is essential to kill weed seedlings.

#### Planting

Plow in early spring, or if necessary, early fall. Just before planting, disk shallow and harrow the land. If you use a lister for forage sorghums, blank list in late fall or early spring. Fill in blank listed rows before nosing out with a lister at planting time. A thorough preparation of the seedbed may increase yield 50 percent.

Delay planting until the soil temperature is about 65° F., generally between May 20 and June 10. If sorghum is planted too early, late germinating weeds like green and yellow foxtail may become troublesome. Sudangrass and early maturing sorghum-sudan hybrids

may be planted as late as July 10 for hay or September pasture. The exact date will depend on the weather conditions and the use to be made of the crop.

Seed sudangrass or sorghum-sudangrass that is to be used as a pasture, hay, haylage, or cover crop with grain drill at a depth of 1 to 1½ inches in rows spaced 6 to 14 inches apart. This method produces plants with finer stems resulting in better quality forage that is more palatable for grazing and easier to cure for hay.

Plant forage sorghums and sorghum-sudangrass hybrids that are to be used for silage in rows spaced 20 to 36 inches apart. Plant at a depth of 1 inch in heavy soil and 1½ to 2 inches in sandy soil. Use a corn planter with furrow-opener, lister, or grain drill. The furrow-opener on a corn planter assures uniform depth of planting and places the seed in moist soil to obtain immediate emergence of the seedling. If you use a lister, list shallower than for corn. If a grain drill is used, bore a hole in a stub 2 x 4 and fasten the stub in drill box above the hole from which the seed is to be planted. Insert a funnel in the hole in the 2x4 and put seed in the funnel.

For sudangrass, plant 15 to 25 pounds per acre. The lower rate is for drier areas and for smaller-seeded varieties in higher rainfall areas. A grain drill set to sow 2 pecks of wheat will ordinarily seed 20 to 25 pounds of sudangrass seed per acre. For seeding in rows 12 to 14 inches apart, plant 12 to 15 pounds per acre. For sorghum-sudangrass hybrids plant 15 to 20 pounds per acre for solid seedings, 12 to 15 pounds for 20-inch rows, 10 to 12 pounds for 30-inch rows and 6 to 8 pounds for 36- to 40-inch rows. For forage sorghum, plant 8 to 10 pounds per acre for rows 30 to 40 inches apart.

#### Weed Control

Weed control is a very important practice because sorghum seedlings have a dormancy period which allows weeds to become very competitive early in the growing season. Prepare the seedbed early and perform one or two shallow cultivations just before planting. Use row-crop cultivation equipment during the growing season if the crop is planted in rows.

No herbicides are recommended for sorghum that is to be followed by small grain. If the following crop will be corn or sorghum, apply 2 lb/A of propazine preplant and incorporate for forage sorghum or 2½ lb/A atrazine post-emergence in forage sorghum or sorghum-sudan hybrids. 2,4-D has not been approved by the EPA for use on forage sorghums.

For complete details on controlling weeds in sorghum, get the Extension Service Fact Sheet entitled "Weed Control in Sorghum."

#### Fertilizer

Nutrient needs of sorghum closely resemble those of corn in that sorghum uses relatively large amounts of nitrogen and moderate amounts of phosphorus and potash. A 5-ton crop of forage removes about 160 pounds of nitrogen, 30 pounds of P<sub>2</sub>O<sub>5</sub> and 120 pounds of K<sub>2</sub>O from the soil.

Although sorghum will respond to any of these elements when soils are deficient, nitrogen is generally



the key element needed for high yields. As a practical rule of thumb, use 5 to 7 pounds of nitrogen for each inch of annual rainfall. The nitrogen can be pre-planted or plowed down with the phosphate and potash.

Overall fertilizer application rates for forage sorghum can be found in the Fact Sheet, "Fertilizing Corn and Sorghum in South Dakota." Use a soil test as a guide in determining the most economical fertilizer rate.

#### **Effect on Soil**

Crops following sorghum or sudangrass sometimes show signs of a nitrogen deficiency. Sorghums are inherently perennial crops and naturally develop a large root system. They store large amounts of carbohydrates in the roots when cool weather approaches. The next year soil bacteria decompose these carbohydrates and they require nitrogen for the protein in their bodies. They take the nitrogen from the soil at the expense of the succeeding crop. This condition can usually be overcome by the application of 30 to 40 pounds of nitrogen per acre.

#### **UTILIZATION OF SORGHUM BY LIVESTOCK**

Good quality sorghum can be used for practically any feeding purpose—for growth, maintenance or fattening. Although it can be utilized by horses, and sheep, most of it is used for beef and dairy cattle.

#### **Forage Sorghum for Dairy Cows**

Sorghum-sudangrass hybrids are most important for dairy pasture during years of short rainfall. However, if it is not needed for summer pasture, it is a useful feed when harvested as greenchop or as a silage crop. Sudangrass and soybeans grown together produce a good haylage feed for dairy herds.

Use sudangrass or sorghum-sudan hybrids for temporary pasture during the hot summer months when other grasses dry up and get tough and unpalatable. Plant a small acreage at corn planting time as insurance for the dairy herd. It is a succulent, high-yielding crop.

Dairy cows on sorghum pasture sometimes lose some weight during the hottest weather, but regain the lost weight during cooler weather. Feed grain at the

rate of 1 pound of grain per 2.5 pounds of initial milk. They may refuse to eat this much grain when the supplementary pasture is first used, but will consume it during the last half of the sorghum pasturing period when the plants are more mature and contain less feed value. Milk production, based on levels of persistence, is well maintained with liberal feeding.

When using sorghum-sudangrass hybrids for pasture, silage or greenchopped roughages, in the dairy ration, be sure to balance the ration for high-producing cows. Remember, it generally contains more moisture than alfalfa pasture, corn silage or grasses used for greenchop. Protein must be balanced but more important, net energy is low and requires a total ration high in grain.

#### **Forage Sorghum for Beef Cattle**

Sudangrass has long been a valuable supplementary and/or emergency hay and pasture crop for beef cattle in South Dakota. Sudangrass seeded as recommended by agronomists provides pasture for 2 to 4 animal units per acre during July and August.

Sorghum grass has received considerable attention recently as a supplementary pasture and silage crop and is being used extensively in many areas of the state even though it runs considerable higher in prussic acid content than Piper sudangrass.

There has been a large increase in plantings of "Sudex," "Hidan" and other sorghum-sudan hybrids. Large acreages are harvested for silage and producers are using this feed as a source of energy for growing and finishing cattle. Most feeders prefer to have the cattle gain about 1.8 to 2.0 pounds per head daily during the growing period in order to obtain economical



Dairy cattle grazing sudangrass pasture.



Beef cattle feeding on sorghum silage.



gains and still utilize large amounts of roughages. Good corn silage full fed along with 1½ lbs. of a 40 percent protein supplement per head daily and free choice mineral and proper vitamin A level will produce 1.8 to 2.0 lbs. daily gain. If forage sorghums are used, it is necessary to feed 1½ pounds of grain per 100 lbs. of body weight daily along with a full feed of sorghum silage and 1½ lbs. of a 40 percent protein supplement per head daily with free choice mineral and proper level of vitamin A. Research has shown that sorghum-sudan silage has a feeding value approximately 80 percent that of corn silage.

Forage sorghum (sorgo or cane) is generally used as a silage crop because it is too coarse for hay or pasture. There is also a danger of prussic acid poisoning when used as a pasture crop. This danger is greatly reduced or eliminated when the crop is ensiled.

Forage sorghum silage works well in rations for wintering replacement heifer calves to gain 1 to 1½ lbs. per head daily. Following are two suggested guideline rations:

#### **Ration No. 1**

25 lbs. Sorghum silage  
¼ lb. corn or sorghum  
grain per 100 lbs. body wt.  
1 lb of a 32% protein Sup.  
20,000 I.U. vitamin A  
Free choice mineral mix

#### **Ration No. 2**

12 lbs. Sorghum silage  
12 lbs. corn silage  
1 lb. oats per 100 lbs  
body wt.  
20,000 I.U. vitamin A  
Free choice mineral mix

Forage sorghum silage also works well for mature beef cows during the winter feeding or gestation period. The ration should be formulated on the weight of the cow. For a 1100 pound mature cow the average body weight during pregnancy should remain relatively constant. Cows in good condition in the fall can lose up to 10% of body weight over the winter. Thin cows, however, should probably gain some weight. Following is a sample ration:

50 lbs. hybrid sorghum-sudan silage  
1 lb. alfalfa hay  
Free choice mineral mix  
20,000 I.U. vitamin A

Observation of the herd is important in adjusting the ration. If the cows appear to be gaining too much it may be necessary to cut back on the silage because a cow that becomes too fat will have more difficulty at calving time.



**Fact Sheets for Additional Information**  
Sudangrass for Supplemental Forage  
Weed Control in Sorghum  
Fertilizing Corn and Sorghum  
Forage Nitrate Poisoning  
Forage Sorghum Varieties and Hybrids

Cooperative Extension Service  
U. S. Department of Agriculture  
South Dakota State University  
Brookings, South Dakota 57006

OFFICIAL BUSINESS

Postage and Fees Paid  
U. S. Department of  
Agriculture  
AGR 101

THIRD CLASS MAIL



# Forage Sorghums in South Dakota



Cooperative Extension Service  
U. S. Department of Agriculture  
South Dakota State University